I CLAIM:

1. A rotation-based method of fabricating a MEMS device comprising the steps of:

fabricating a package receptacle-received electronic circuit first portion of said MEMS device on a first substrate member;

constructing an active mechanical member inclusive and substrate edge hinge inclusive MEMS module second portion of said MEMS device on a second substrate member;

including a substrate edge hinge-engaged MEMS module physical support member in said constructed mechanical second portion of said MEMS device;

using said edge hinge-engaged physical support member as a handling-enabling and protecting tool for said constructed mechanical portion of said MEMS device during and after a separation of said constructed mechanical portion of said MEMS device from said second substrate member;

rotating said constructed mechanical portion of said MEMS device, using said edge hinge and said physical support member, into a position of selected inverted aligning with said package receptacle-received electronic circuit first portion of said MEMS device;

engaging said constructed mechanical portion of said MEMS device with said package receptacle-received electronic circuit first portion of said MEMS device.

2. The rotation-based method of fabricating a MEMS device of claim 1 wherein said step of constructing an active mechanical member inclusive and substrate edge hinge inclusive MEMS module second portion of said MEMS device on a second substrate member includes constructing a plurality of tether members joining said MEMS module with said MEMS module physical support member.

3. The rotation-based method of fabricating a MEMS device of claim 2 wherein said step of using said edge hinge-engaged physical support member as a handling enabling and protecting tool for said constructed mechanical portion of said MEMS device during and after a separation of said constructed mechanical portion of said MEMS device from said second substrate member includes maintaining said MEMS device in an integral planar condition during second substrate member-removed handling through connecting of said MEMS module with said MEMS module physical support member by said tether members.

4. The rotation-based method of fabricating a MEMS device of claim 1 wherein said step of using said edge hinge-engaged physical support member as a handling enabling and protecting tool for said constructed mechanical portion of said MEMS device during and after a separation of said constructed mechanical portion of said MEMS device from said second substrate member includes rotating said MEMS module about said substrate edge hinge by applying externally sourced rotational force to said physical support member.

5. The rotation-based method of fabricating a MEMS device of claim 4 wherein said step of rotating said MEMS module about said substrate edge hinge by applying externally sourced rotational force to said physical support member includes applying said externally

sourced rotational force, during a movable temporary probe tip engagement, to said hinge-engaged physical support member.

6. The rotation-based method of fabricating a MEMS device of claim 1 wherein said step of using said edge hinge-engaged physical support member as a handling enabling and protecting tool for said constructed mechanical portion of said MEMS device during and after a separation of said constructed mechanical portion of said MEMS device from said second substrate member includes performing an initial release of said MEMS module from said second substrate member using second substrate member fabricated tension members acting on said physical support member.

7. The rotation-based method of fabricating a MEMS device of claim 1 further including the step of locking said edge hinge-engaged physical support member and said constructed mechanical portion of said MEMS device into said position of selected inverted aligning with said package receptacle-received electronic circuit first portion of said MEMS device, prior to said engaging step, by applying external manipulation forces to a physical support member locking element also received on said second substrate member.

8. The rotation-based method of fabricating a MEMS device of claim 1 wherein said steps of constructing, including, using, rotating and engaging are performed in a plurality of iterations each adding an additional MEMS module second portion to said electronic circuit first portion of said MEMS device.

9. Rotationally mergeable MEMS apparatus comprising the combination of:

an electronic circuit module having a MEMS active element controlling output electrode disposed in an upper layer output location thereof;

a mating MEMS active element module having an electromagnetic field movable active element disposed in an exposed, said output electrode corresponding, location thereof, said MEMS active element module including module supporting flexible tensile members connected with a substrate hinge-mounted sacrificial MEMS active element module support element;

a MEMS active element module physical support element latching member movably mounted on said substrate and disposable in a position of mutually locked engagement with said substrate hinge mounted MEMS active element module support element in a selected off-chip and rotated about said hinge location thereof adjacent said electronic circuit module.

10. The rotationally mergeable MEMS apparatus of claim 9 wherein said MEMS active element module physical support element includes a slider element engageable with a tongue portion of said MEMS active element module physical support element in said position of mutually locked engagement.

11. The rotationally mergeable MEMS apparatus of claim 9 wherein said MEMS active element module physical support element latching member is comprised of semiconductor materials included in said MEMS active element module.

12. The rotationally mergeable MEMS apparatus of claim 9 wherein said MEMS active element module physical support element latching member, said module supporting flexible tensile members, said hinge-mounted sacrificial MEMS active element module support element and said MEMS active element module are comprised of silicon semiconductor materials.

13. A rotational positioning based removed substrate method for joining a micromechanical module and an electronic circuit array to form a flip chip MEMS electrical circuit device, said method comprising the steps of:

constructing said electronic circuit array of said flip chip MEMS circuit device on a first substrate element;

disposing said constructed electronic circuit array in an open faced partial package of said MEMS electrical circuit device;

fabricating said micromechanical module portion of said flip chip MEMS circuit device in layers of a multi layer coating over a sacrificial second MEMS substrate element;

forming a hinge inclusive physical shield element and physical shield element latch apparatus in said same layers of a multi layer coating over said sacrificial second MEMS substrate element;

said fabricating and forming steps being accomplished during an upright physical disposition of said sacrificial second substrate member and said micromechanical module portion of said flip chip MEMS electrical circuit device;

releasing said fabricated micromechanical module portion of said MEMS circuit device from said second sacrificial substrate member with an etching sequence;

freeing said formed hinge inclusive physical shield element and said physical shield element latch apparatus from said second sacrificial substrate member with an etching sequence;

rotating said hinge inclusive physical shield element and said released micromechanical module portion of said MEMS circuit device into a selected inverted off substrate position;

said micromechanical module portion of said MEMS circuit device receiving stabilizing and planerizing support from said physical shield element during and following said rotating step;

fixing said physical shield element in a selected position with respect to said sacrificial second MEMS substrate element by engaging said physical shield element latch apparatus with said physical shield element in said selected inverted off substrate position;

aligning said micromechanical module portion of said MEMS circuit device with said constructed electronic circuit array by moving said sacrificial second MEMS substrate element, said latched physical shield element and said micromechanical module portion of said MEMS circuit device into registration with said constructed electronic circuit array; and

merging said micromechanical module portion of said MEMS circuit device, from said selected, stabilized, inverted off chip position, with said open faced partial package received constructed electronic circuit array of said MEMS circuit device.

14. The rotational positioning based removed substrate method for joining a micromechanical module and an electronic circuit array to form a flip chip MEMS electrical circuit device of claim 13 wherein said constructing step comprises forming a CMOS electronic circuit array.

15. The rotational positioning based removed substrate method for joining a micromechanical module and an electronic circuit array to form a flip chip MEMS electrical circuit device of claim 13 wherein said releasing step and said freeing step are accomplished during a single etching sequence.

16. The rotational positioning based removed substrate method for joining a micromechanical module and an electronic circuit array to form a flip chip MEMS electrical circuit device of claim 13 wherein:

said forming step includes formation of additional elements cooperating with said micromechanical module portion of said flip chip MEMS circuit device and said hinge inclusive physical shield element; and

said releasing step and said freeing step also include liberating said additional elements cooperating with said micromechanical module and said hinge inclusive physical shield element.

17. The rotational positioning based removed substrate method for joining a micromechanical module and an electronic circuit array to form a flip chip MEMS electrical circuit device of claim 16 wherein said liberated additional elements cooperating with said micromechanical module and said hinge inclusive physical shield element include a plurality of tether elements connecting said micromechanical module and said hinge inclusive physical shield element and a plurality of tensioned lifting members located adjacent said hinge

18. The rotational positioning based removed substrate method for joining a micromechanical module and an electronic circuit array to form a flip chip MEMS electrical circuit device of claim 17 wherein said released micromechanical module portion of said MEMS circuit device is rotated in said step of rotating said hinge inclusive physical shield element and said released micromechanical module portion of said MEMS circuit device into a selected inverted off substrate position by way of said plurality of tether elements connecting said micromechanical module and said hinge inclusive physical shield element.

19. The rotational positioning based removed substrate method for joining a micromechanical module and an electronic circuit array to form a flip chip MEMS electrical circuit device of claim 13 wherein said freeing of said formed hinge inclusive physical shield element occurs during said step of freeing of said formed hinge inclusive physical shield

element and said physical shield element latch apparatus from said second sacrificial substrate member with an etching sequence.

20. The rotational positioning based removed substrate method for joining a micromechanical module and an electronic circuit array to form a flip chip MEMS electrical circuit device of claim 13 wherein said first substrate element and said sacrificial second MEMS substrate element are comprised of differing semiconductor materials.